

**TOPICAL COSMETIC COMPOSITION WITH SKIN
REJUVENATION BENEFITS**

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to topical compositions for providing rejuvenation benefits to the skin. More particularly, the present invention relates to compositions providing anti-aging benefits to the skin.

2. Description of the Prior Art

There is active contemporary interest in the cosmetics industry to develop products that may be applied topically to the skin that provide anti-aging, hydrating, and/or skin texturizing benefits. Cosmetic products, which enhance the appearance of skin, are increasingly in demand. Consumers are interested in mitigating or delaying the signs of aged or photo-aged skin, such as fine lines, wrinkles, drying, and sagging skin. During the aging process, the complexion of the skin, i.e., the color and appearance of the skin, deteriorates slowly from aging and/or exposure to sunlight.

Cosmetic surgery can be used as a treatment for aged skin. However, such treatment is costly and carries the risks normally associated with anesthesia and surgery. Alternatively, cosmetic products that provide anti-aging benefits are highly desirable, to both manufacturers and consumers.

The number of cosmetic products directed to help the skin of consumers look younger and less wrinkled is steadily increasing. Commonly, such products contain exfoliating acids as active ingredients. Such anti-aging active ingredients include, for example, a-hydroxy acids (e.g., lactic, glycolic, citric), b-hydroxy acids (e.g., salicylic; 5-n-octanoylsalicylic acids) and retinoids (retinoic acids; retinol). It is known that these anti-aging active ingredients have a significant disadvantage in that they frequently are associated with consumer discomfort characterized by burning, smarting, itching or sensation of tightness after application. There remains a general need in the cosmetics industry for products that retard or counter aging effects on the skin, and more specifically for products that produce such effects without undesirable side effects.

Plant extracts have been used in cosmetic compositions. U.S. Patent No. 5,709,864 to Patrice et al. is directed to compositions one effect of which is anti-aging activity. This patent provides dermatological compositions containing extract of a plant of the genus *Tephrosia*, particularly an extract of the species *Tephrosia purpurea*.

U.S. Patent No. 5,624,673 to Frederic et al. is directed to a method for the treatment of skin for anti-aging and other effects using a plant extract. This patent provides a treatment of the epidermis using an extract of various parts of a plant from the genus *Prunella*, particularly an extract of the species *Prunella vulgaris*.

U.S. Patent No. 5,093,109 to Mausner is directed to cosmetic compositions for retarding the effects of aging on the complexion of the skin. This patent provides compositions that have anti-aging agents obtained from plant extracts. These anti-aging agents are flavenoid compounds provided by extracts of butcher broom, buckwheat, passion flower and combinations thereof.

U.S. Patent No. 5,925,348 to Babcock et al. is directed to a method of treating skin with an anti-aging

component. This patent provides anti-aging components obtained from extracts of the Sacred Lotus plant, the Yellow Lotus plant, Yellow Lotus seeds and wheat germ oil. Extracts of animal organs are also provided as anti-aging components.

U.S. Patent Nos. 5,891,440 and 6,060,063 are directed to oral and topical phytoestrogen compositions having pomegranate oil obtained from pressed seed or from an extract of the seed and juice. The topical compositions may be applied to the skin, including the face and the vagina. The topical compositions may be used to relieve symptoms in menopausal women, including vaginal dryness and lack of skin tone.

WO 00/164472 is directed to a method of treating dermatological conditions via ingestion of pomegranate. Treatable conditions include dry and yellowish skin, hyperpigmented skin and wrinkles.

Japanese Publication 143491 is directed to anti-aging cosmetics. The anti-aging inhibitor is essence of pomegranate seeds.

German Publications 4330597, 4312109 and 4204255 are directed to hair growth promoting compositions having a large number of plant constituents, including pomegranate juice, core, peel, pips, inner skin and paraffin-based oil.

Soviet Publication 1602533 is directed to face creams for greasy skin. The creams contain stearin, emulsion wax, triethanolamine, carbonated extracts of pomegranate skins and seed and of parsley.

In spite of the various anti-aging cosmetic products on the market for the treatment of skin, there remains a need for effective anti-aging compositions that can be applied topically to the skin. More particularly, there remains a need for topically applied cosmetic compositions that have anti-aging and skin texture benefits without the frequent irritation associated with the use of exfoliating acids. The present invention achieves these benefits by a topical composition comprising natural ingredients, preferably botanical ingredients, as active components, instead of such prior art acids discussed above. In other words, the present composition is substantially free of such acids.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide cosmetic compositions that improve the appearance of skin and remediate the effects of aging.

It is another object of the present invention to provide cosmetic compositions having a blend of neem seed cell broth and one or more additional botanical ingredients.

It is another object of the present invention to provide cosmetic compositions having pomegranate fruit extract and optionally one or more additional botanical ingredients.

These and other objects and advantages of the present invention, and equivalents thereof, are achieved by anti-aging cosmetic compositions having botanical ingredients, and the use of such compositions for topical application to the skin.

A preferred composition of the present invention has an effective amount of neem extract, preferably neem seed

cells, more preferably neem seed cell broth, and one or more botanical ingredients selected from the group consisting of grape seed extract, pomegranate fruit extract, cucumber extract, carrot extract, rosemary extract, iris root extract, white birch extract, *Salvia miltorrhiza* extract and Laminaria algae extract. In a more preferred embodiment, the neem seed cell broth and the other botanical ingredient(s) are combined with a cosmetically acceptable vehicle.

Another preferred composition of the present invention has an effective amount of pomegranate fruit extract and optionally a botanical ingredient selected from the group consisting of neem extract, preferably neem seed cell broth, grape seed extract, cucumber extract, carrot extract, Rosemary extract, Iris root extract, white birch extract, *Salvia miltorrhiza* extract and Laminaria algae extract. A more preferred embodiment of the composition has the pomegranate fruit extract and any of the botanical ingredients with a cosmetically acceptable vehicle.

DETAILED DESCRIPTION OF THE INVENTION

The present invention provides anti-aging benefits to and improves the aesthetic appearance of the skin. In

particular, the present invention provides compositions and methods for treating skin to prevent, inhibit, reduce and/or ameliorate the signs of dermatological aging due to, for example, chronological aging, hormonal aging, and/or photoaging. Such signs of aging include, but are not limited to skin fragility; loss of collagen and/or elastin; estrogen imbalance in skin; skin atrophy; appearance and/or depth of lines and/or wrinkles, including fine lines; skin discoloration, including dark eye circles; skin sagging; skin fatigue and/or stress, e.g. skin breakout due to environmental stress, such as pollution and/or temperature changes; skin dryness; skin flakiness; cellular aging; loss of skin tone, elasticity and/or luster; loss of skin firmness; poor skin texture; loss of skin elasticity and/or resiliency; and thin skin.

The benefits and improvements to the aesthetic appearance of skin can be manifested in any of the following: reduction in pore size; improvement in skin tone, radiance, clarity and/or tautness; promotion of anti-oxidant activity; improvement in skin firmness, plumpness, suppleness, and/or softness; improvement in procollagen and/or collagen production; improvement in skin texture and/or promotion of retexturization; improvement in skin

barrier repair and/or function; improvement in appearance of skin contours; restoration of skin luster and/or brightness; replenishment of essential nutrients and/or constituents in the skin decreased by aging and/or menopause; improvement in communication among skin cells; increase in cell proliferation and/or multiplication; increase in skin cell metabolism decreased by aging and/or menopause; improvement in skin moisturization; promotion and/or acceleration of cell turnover; enhancement of skin thickness; increase in skin elasticity and/or resiliency; and enhancement of exfoliation, with or without the use of alpha or beta hydroxy acids, keto acids or other exfoliants.

The present invention also includes methods of treating skin with the topical application of the present cosmetic compositions.

In one embodiment of the present invention, the topical composition comprises pomegranate fruit extract, preferably as an aqueous extract, in a cosmetically acceptable vehicle. In another embodiment of the present invention, the topical composition comprises a blend of botanical ingredients.

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In one preferred blend, neem seed cell broth is combined with one or more additional botanical ingredients selected from one or more of the following: grape seed extract, pomegranate fruit extract, cucumber extract, carrot extract, Rosemary extract, iris root extract, white birch extract, *Salvia miltorrhiza* extract, and Laminaria algae extract. The neem seed cell broth is comprised of tissue cultured neem seed cells and the respective cell culture medium. In this blend, it is contemplated that the neem seed cells can be separated from the broth and used absent the culture medium component or, alternatively, the culture medium component alone, which invariably contains seed cell constituents even after the seed cells have been separated therefrom, can be used instead.

In another blend preferred, pomegranate fruit extract is combined with one or more additional botanical ingredients selected from one or more of the following: grape seed extract, cucumber extract, carrot extract, Rosemary extract, iris root extract, white birch extract, *Salvia miltorrhiza* extract, and Laminaria algae extract.

A preferred blend has both neem seed cell broth and

pomegranate fruit extract. A more preferred blend has neem seed cell broth and pomegranate fruit extract along with either or both of *Salvia miltiorrhiza* extract and grape seed extract.

The amount of the active botanical blend in the compositions of the present invention is from about 0.001 percentage by weight (wt%) to 50 wt% based on the total weight of the composition. Preferably, the amount is about 0.01 wt% to about 20 wt%. More preferably, the amount is about 0.1 wt% to about 10 wt%. Most preferably, the amount is about 3 wt% to about 8 wt%.

The blends of the present invention are preferably used in a cosmetically acceptable vehicle. Examples of cosmetically acceptable vehicles suitable for all embodiments of the present invention include, but are not limited to, water, glycerin, various alcohols such as ethanol, propyl alcohol, vegetable oil, mineral oil, silicone oils, fatty ethers, fatty esters, fatty alcohols, glycols, polyglycols or any combinations thereof.

Neem seed cell broth is prepared by tissue culture of cells isolated from neem seed. Neem seed cells are

cultured in tissue culture medium containing appropriate nutrients and ingredients. This process provides for rapid cell growth and the production of key active compounds from the neem seed cell broth. The use of cell bioengineering in the form of plant tissue culture provides a standardized predictably high potency supply of this ingredient in the botanical blend of this invention. The Inventors' *in vitro* studies have shown that neem seed cell broth improves cell proliferation of keratinocytes, increases fibroblast metabolism, decreases skin pigmentation, decreases stress induced aging effects and increases pro-collagen synthesis. Additional teachings to neem seed cell extract and neem seed cell broth are disclosed in copending application entitled "Topical Compositions Having Undifferentiated Plant Seed Cells and Method for Using Same," filed November 9, 2001, the entire disclosure of which is incorporated herein by reference.

In cosmetic compositions of the present invention, the preferred amount of neem seed cell broth is about 0.001 wt% to about 50 wt%, preferably amount about 0.01 wt% to about 10 wt%, and more preferably about 0.1 wt% to about 5.0 wt%, based on the total weight of the composition.

The pomegranate fruit extract is an aqueous extract of the whole fruit, including the seed, peel, pulp, and juice. The extract is preferably non-carbonated. The Inventors' *in vitro* studies have shown that pomegranate fruit extract decreases pigmentation, binds effectively to estrogen receptor, inhibits the activity of elastase and collagenase, and increases pro-collagen synthesis. When used in the cosmetic compositions of the present invention, the preferred amount of pomegranate fruit extract is about 0.01 wt% to about 10.0 wt% and preferably about 0.1 wt% to about 5.0 wt% based on the total weight of the composition.

Danshen, or extract of *Salvia miltiorrhiza*, is useful in the present invention. The Inventors' *in vitro* studies have shown that *Salvia miltiorrhiza* extract increases fibroblast metabolism and increased pro-collagen synthesis. When used in the present cosmetic compositions, the preferred amount of *Salvia miltiorrhiza* extract is about 0.01 wt% to about 10 wt% and preferably about 0.1 wt% to about 5.0 wt% based on the total weight of the composition.

Grape seed extract is useful in the present invention. The Inventors' *in vitro* studies have shown that grape seed extract increases fibroblast metabolism, decreases

pigmentation, and binds effectively to estrogen receptor. When used in the present cosmetic compositions, the preferred amount of grape seed extract is about 0.01 wt% to about 10 wt%, and preferably about 0.1 wt% to about 5.0 wt%, based on the total weight of the composition.

Cucumber extract is useful in the present invention. The Inventors' *in vitro* studies have shown that cucumber extract increases fibroblast metabolism, decreases pigmentation, and binds effectively to estrogen receptor. When used in the present cosmetic compositions, the preferred amount of cucumber extract is about 0.01 wt% to about 10 wt%, and preferably about 0.1 wt% to about 5.0 wt%, based on the total weight of the composition.

Carrot extract is useful in the present invention. Carrot extract contains b-carotene and vitamin A. The Inventors' *in vitro* studies have shown that carrot extract decreases skin pigmentation, binds effectively to estrogen receptor, and increases pro-collagen synthesis. When used in the present cosmetic compositions, the preferred amount of carrot extract is about 0.01 wt% to about 10 wt%, and preferably about 0.01 wt% to about 5.0 wt%, based on the total weight of the composition.

Rosemary extract is useful in the present invention. The Inventors' *in vitro* studies have shown that Rosemary extract increases fibroblast metabolism. When used in the present cosmetic compositions, the preferred amount of Rosemary extract is about 0.001 wt% to about 10 wt%, and preferably about 0.01 wt% to about 5.0 wt%, based on the total weight of the composition.

Iris root extract, an extract of the root of *Iris florentina*, is useful in the present invention. The Inventors' *in vitro* studies have shown that iris root extract increases fibroblast metabolism and decreases pigmentation. Preferably, the iris root extract useful in the present invention has from about 1.2 grams/liter to about 2.2 grams/liter of genistein equivalent isoflavones. When used in the present cosmetic compositions, the preferred amount of iris root extract is about 0.1 wt% to about 10 wt%, and preferably about 0.1 wt% to about 5.0 wt%, based on the total weight of the composition.

White birch extract is useful in the present invention. The Inventors' *in vitro* studies have shown that white birch extract increases fibroblast metabolism and

decreases pigmentation. When used in the present cosmetic compositions, the preferred amount of white birch extract is about 0.001 wt% to about 10 wt%, and preferably about 0.01 wt% to about 5.0 wt%, based on the total weight of the composition.

Laminaria algae extract is useful in the present invention. The Inventors' *in vitro* studies have shown that Laminaria algae extract increases fibroblast metabolism and decreases pigmentation. When used in the present cosmetic compositions, the preferred amount of Laminaria algae extract is about 0.001 wt% to about 10 wt%, and preferably about 0.01 wt% to about 2.0 wt%, based on the total weight of the composition.

The compositions of the present invention may be formulated in any convenient form suitable for topical application to the skin. Such forms include aerosol spray, gel, cream, dispersion, emulsion, foam, liquid, lotion, mousse, patch, pomade, powder, pump spray, solid, solution, stick or towelette. The preferred cosmetic form is a cream that is an oil-in-water emulsion. Water-in-oil and water-in-silicone emulsions are also contemplated.

The present invention is further illustrated by the following examples, which are intended only for illustration of the present invention and not for limitation of the scope thereof.

Example 1

Oil-in-Water Emulsion

Humectant (e.g. glycols, glycerols)
0.5-15%
Thickeners (e.g. gums, starches, polymerS)
0.1-4%
Chelants I (e.g. disodium edta. tetrasodium EDTA)
0.001-0.5%
Preservatives
0.01-2%
Sunscreen (e.g. benzophenone, ethylhexylmetnoxycinnamate)
0.1-50%
Silicone
0.1-15%
Silica
0.01-10%
Fatty Alcohol/ Emulsifiers /Wax/ Fatty Acid
0.5-15%
Emollients
0.1-20%
Extracts (e.g. one or more of pomegranate extract,
neem seed cell broth, grape seed extract,
salvia miltiorrhiza extract, iris florentina root extract,
carrot extract, cucumber extract,
white birch(betula alba) bark extract,
rosemary extract, algae extract, or any combination)
0.0001-50%
Demineralized Water
Q.S.

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Example 2

Oil-in-Water Emulsion

Humectant (e.g. Glycols, Glycerols)

0.5-15%

Thickeners (e.g. Gums, Starches, Polymers)

0.1-4%

Chelants I (e.g. Disodium EDTA. Tetrasodium EDTA)

0.001-0.5%

Preservatives

0.01-2%

Sunscreen (e.g. Parsol 1789, ethylhexylmethoxycinnamate, benzophenone-3)

0.1-50%

Silicone

0.1-15%

Silica

0.01-10%

Fatty alcohol/ Emulsifiers /Wax/ Fatty acid (e.g. ceteth-20 phosphate/cetearyl alcohol/dicetyl phosphate, Tribehenin PEG-20 Ester, Sodium Dihydroxycethyl phosphate, cetearyl glucoside, cocoglyceride,

0.5-15%

Emulsion Stabilizers/Viscosity Modifiers (e.g. acrylates/C₁₀₋₃₀ Alkyl acrylate Crosspolymer, Acrylate/Aminoacrylates/C₁₀₋₃₀ Alkyl PEG-20 Itaconate, Sodium Acrylate/Acryloyldimethyl Taurate Copolymer, Acrylates/C₁₀₋₃₀ Alkyl Acrylate Crosspolymer

0.1-20%

Film Formers (e.g. decene/butene copolymer, acrylates/octylacrylamide copolymer, adipic acid/diethylene glycol/glycerin crosspolymer

0.001-2%

Emollients

0.1-20%

Pomegranate extract

0.01-2%

Neem seed cell broth

0.01-10%

Grape seed extract

0.01-2%

Salvia Miltiorrhiza extract

0.01-10%

Iris florentina root extract

0.00-20%

Carrot extract
0.00-2%
Cucumber extract
0.00-2%
White birch(Betula Alba) Bark extract
0.00-2%
Rosemary extract
0.00-2%
Algae extract
0.00-2%
Demineralized Water
Q.S.

Example 3

Water/Silicone Emulsion

Sodium PCA 50%
0.1-4%
Sodium Lactate 60%
0.01-10%
Sodium Chloride
0.1-10%
Humectant (Glycerin, Glycols, Glycerols)
0.5-10%,
Ammonium Hydroxide
0.01-10%
Cyclomethicone
0.1-20%
Cyclomethicone/Dimethicone Copolyol
0.1-20%
Emollients (E.G. Cetyl Octanoate)
0.1-20%
Dimethicone Copolyol/Cyclopentasiloxane
0.1-10%
Pomegranate Extract
0.01-2%
Neem Seed Cell Broth
0.01-10%
Grape Seed Extract
0.00-2%
Salvia Miltiorrhiza Extract
0.00-10%
Iris Florentina Root Extract
0.00-20%
Carrot Extract
0.00-2%

Cucumber Extract
0.00-2%
White Birch(Betula Alba) Bark Extract
0.00-2%
Rosemary Extract
0.00-2%
Algae Extract
0.00-2%
Demineralized Water
Q.S

Example 4

Gel

Carbopol
0.01-3%
Glycerin
0.1-30%
Butylene Glycol
0.1-30%
Disodium Edta
0.01-2%
Methylparaben
0.01-2%
Hydroxyethyl Cellulose
0.01-2%
Corn (Zea Mays) Starch
0.01-10%
C.S. D&C Yellow No.10
0.001-1%
C.S. Fd&C Blue No. 1
0.001-1%
POE (20M) METHYL GLUCOSE ETHER
0.01-10%
DIMETHYL POLYSILOXANE
0.01-10%
PEG 50 SHEA BUTTER
0.01-10%
SODIUM HYDROXIDE SOLUTION
0.01-5%
BENZYL ALCOHOL
0.01-5%
POMEGRANATE EXTRACT
0.01-2%
NEEM SEED CELL BROTH

0.00-10%
GRAPE SEED EXTRACT
0.00-2%
Salvia Miltiorrhiza Extract
0.00-10%
Iris Florentina Root Extract
0.00-20%
Carrot Extract
0.00-2%
Cucumber Extract
0.00-2%
White Birch(Betula Alba) Bark Extract
0.00-2%
Rosemary Extract
0.00-2%
Algae Extract
0.00-2%
Demineralized Water
Q.S

Example 5

Cleansing Foam

Humectant (Glycerin, Butylene Glycol)
5-25%
Polyethylene Glycol
0.1-20%
Bentonite
0.1-20%
Stearic Acid
0.1-30%
Myristic Acid
0.1-20%
Cetearyl Alcohol/Ceteareth-20
1.00000%
Potassium Hydroxide 45%
0.1-20% Preservatives(E.G. Benzyl Alcohol,
0.1-10%
2-Phenoxyethanol, Benzyl Alcohol)
Pomegranate Extract
0.00-2%
Neem Seed Cell Broth
0.01-10%
Grape Seed Extract
0.01-2%

Salvia Miltiorrhiza Extract
0.00-10%
Iris Florentina Root Extract
0.00-20%
Carrot Extract
0.00-2%
Cucumber Extract
0.00-2%
White Birch(Betula Alba) Bark Extract
0.00-2%
Rosemary Extract
0.00-2%
Algae Extract
0.00-2%
Demineralized Water
Q.S.

Although the present invention describes in detail certain embodiments, it is understood that variations and modifications exist known to those skilled in the art that are within the invention. Accordingly, the present invention is intended to encompass all such alternatives, modifications and variations that are within the scope of the invention as set forth in the following claims.